COBOL Compiles on the Cloud

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Its All About Saving Money

- Mainframe cost containment, software and hardware forces us to continually look for more cost effective solutions
- The mainframe is here to stay
  - It's the heart of IT
  - Major business processes all have the majority of their data in mainframe storage
- We've already picked the low hanging fruit
- We've provided a slower cost growth
  - Sub-Capacity pricing, audited and verified every month
  - Hardware upgrades
    - Technology dividend on software – VWLC/AWLC pricing
    - Better lease/purchase terms
  - Software cost offload – zIIPs, zAAPs
  - LPAR Defined Capacity/Group Capacity Limits
  - Negotiated better pricing on 3rd party software
  - Eliminated unused software
  - Replaced software where appropriate with lower cost equivalents
  - Finding and fixing inefficient application code

COBOL Cost Containment

- At one point in time we had 4 different COBOL compiler versions
- Over time we eliminated 2 old versions
- We started upgrading the current version of COBOL and eliminating its predecessor
- We still have some 24 bit COBOL which we are slowly upgrading as these programs get upgrades

COBOL Issues

- The COBOL compilers were licensed for all machines
- Some programs got tested with one version of COBOL and placed in production with another
- Mismatched compile options between test and production

Solving the Problems

- A co-worker developed a compile process for test and production to solve the compile version and options problems
- We canceled the 24-bit COBOL license, all COBOL compiles must now convert to the current (31-bit) COBOL version (IBM COBOL V4 5655-S71)
- We were planning on a multi-job process routing all compiles to LPARs on one machine
  - IDMS and DB2 binds
  - Reduce licenses to one machine, reducing cost

COBOL Compiles on the Cloud

- We found a provider offering COBOL compiles on the cloud, Cloud Compiling
  - Cloud compile is the ability to shift the compiles off your mainframe to the vendor's data center
- Eliminates the need for multi-job compile processes
- Our contract negotiation provided lower cost than our IBM VWLC costs
  - We pay an attractive percentage of the IBM VWLC cost for COBOL compiles
  - We audit the cloud compile usage and VWLC cost with LCS from I/S Management Strategies, Ltd.

IBM COBOL

- We kept our license for IBM COBOL V4 (5655-S71) so we could do compiles in-house if the network connections or service are not available
- The COBOL V4 no 89 parameter in SCRT was set to *NONE
  - * IBM ENTERPRISE COBOL FOR Z/OS V4
  - 5655-S71=*NONE
- We pay the 0-3 MSU charge every month to keep the compiler available

How does Cloud Compile work?

- By using customized software (named exactly the same as the compiler), the following occur:
  - The compile is intercepted at the compile job step
  - The cloud compile software dynamically builds FTP files to send the expanded source code to the vendor site
  - Once the source FTP (USS task) is successfully completed the in-house compile job is placed into a wait state.
  - The vendor site compiles the source
  - A FTP of the output of the vendor compile back to the original compile job is invoked
  - Once the FTP is successfully completed, the in-house compile job continues through the rest of its steps
- Note, all compile options must be specified to guarantee a proper compile

The Implementation Path for Cloud Compile

- The customized software was initially implemented into a “TEST” library
- A wide variety of tests were submitted using the test library (CICS, IDMS, DB2, Batch, and combinations of software)
- When testing was complete, the standard compilation tool was modified to use the new library
- When it proved to be fully functional, the new test library members were copied into the production libraries for all compiles to use

The Differences Between Cloud Compiles and In-house Compiles

- There are three identifiable output files that come out of Cloud Compile that do not come out of in-house compiles.
  - TCCPRINT contains the following:
    - TCC0001I The Cloud Compiler CC 5655-S71 V3R1.3 starting at 12:43:02 on 12/06/2012 (Build 208011818)
    - TCC0002I Copyright 2009, 2010, 2011 Charles Mills Consulting, LLC
    - TCC0042I Cloud Compiler parameter file is CLOUDCMP.CNTL(SVCPARMS)
    - TCC0057I Starting processing on Facility FNTS at 12:43:02
    - TCC0035I Cloud Compiler terminating at 12:43:09, return code 0
  - TCCFTP contains all information about the FTP processes to and from the cloud compile vendor's location.
  - TCCSYSMS contains the JES2 Job Log from the vendor's location for the compile.
- The cloud compile program creates USS tasks to perform the FTP processes with the proper parent child relationships

Cloud Compile Results

- CPU utilization in the compile step is 2 to 3 times higher with cloud compile due to the dynamic FTP steps. While it is higher, it is still a miniscule amount.
- The wall clock time is about 2 to 3 times longer in the compile step.
- Because of the USS FTP tasks, we discovered COBOL compiles that we didn't know about, occurring in TSO
- Having multiple CEC's and LPAR's several of which are licensed to use the compilers, is a significant software licensing cost. By eliminating the need for these licenses, a significant savings is achieved
- So far we have had no legal, security, or integrity issues with sending our COBOL programs to the cloud for compiling
- THE JUICE IS worth the squeeze!

A Quick Aside

- We also looked at our C++ compiler
- It was licensed on one machine only
- We found out we had done 3 C++ compiles in the previous 12 months
  - 2 users
  - 3 tests
- We cancelled the license for the compiler
- Since that time we have had 1 time we needed it to compile a vendor exit, it was rewritten in assembler

Questions?

Thanks!

- Rick Howlett, Humana – The Compile process, implementation and the significant portions of this presentation
- Tom Wilson, Humana – Installation of the Cloud Compile software
- Al Sherkow, I/S Management Strategies – LCS enhancements to audit/report on cloud compile usage

Who provides Cloud Compile?

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